CITY OF BEAVER DAM, KENTUCKY

INDUSTRIAL DISCHARGE PERMIT APPLICATION FORM

Note: Please read all attached instructions prior to completing this application.

SECTION A - GENERAL INFORMATION

1. Facility Name: Neo Industries (Kentucky) Inc.

2. Facility Address:
Street: 10 Technology Place
City: Beaver Dam State: Ky. Zip: 42320

3. Business Mailing Address:
Street or P.O. Box: SAME
City: _____ State: _____ Zip: _____

4. Designated signatory authority of the facility:
[Attach similar information for each authorized representative]

Name: Bob Lellie
Title: Plant Manager
Address: SAME
City: _____ State: _____ Zip: _____
Phone #: 270-274-3504

5. Designated facility contact:

Name: Greg Boyd
Title: Environmental Health and Safety
Phone #: 270-274-3504

SECTION B - BUSINESS ACTIVITY

1. If your facility employs or will be employing processes in any of the industrial categories or business activities listed below (regardless of whether they generate wastewater, waste sludge, or hazardous wastes), place a check beside the category of business activity (check all that apply).

Industrial Categories*

[ ] Aluminum Forming
[ ] Asbestos Manufacturing
[ ] Battery Manufacturing
[ ] Can Making
[ ] Carbon Black
[ ] Coal Mining
[ ] Coil Coating
[ ] Copper Forming
[✓] Electric and Electronic Components Manufacturing
[ ] Electroplating
[ ] Feedlots
[ ] Fertilizer Manufacturing
[ ] Foundries (Metal Molding and Casting)
[ ] Glass Manufacturing
[ ] Grain Mills
[ ] Inorganic Chemicals
[ ] Iron and Steel
[ ] Leather Tanning and Finishing
[ ] Metal Finishing
[ ] Nonferrous Metals Forming
[ ] Nonferrous Metals Manufacturing
[ ] Organic Chemicals Manufacturing
[ ] Paint and Ink Formulating
[ ] Paving and Roofing Manufacturing
[ ] Pesticides Manufacturing
[ ] Petroleum Refining
[ ] Pharmaceutical
[ ] Plastic and Synthetic Materials Manufacturing
[ ] Plastics Processing Manufacturing
[ ] Porcelain Enamel
[ ] Pulp, Paper, and Fiberboard Manufacturing
[ ] Rubber
[ ] Soap and Detergent Manufacturing
[ ] Steam Electric
[ ] Sugar Processing
[ ] Textile Mills
[ ] Timber Products

A facility with processes inclusive in these business areas may be covered by Environmental Protection Agency's (EPA) categorical pretreatment standards. These facilities are termed "categorical users".

2. Give a brief description of all operations at this facility including primary products or services (attach additional sheets if necessary):
Neo Industries electroplates rolling mill rolls for aluminum and steel mill industries. Neo Industries does some mechincal plating.

3. Indicate applicable Standard Industrial Classification (SIC) for all processes (If more than one applies, list in descending order of importance.):

a. 3471
b. _____
c. _____
d. _____
e. _____

4. PRODUCT VOLUME:

PRODUCT (Brandname) (levels with others (and no u.l)	PAST CALENDAR YEAR Amounts Per Day (Daily Units) Average	Maximum	ESTIMATE THIS CALENDAR YEAR Amounts Per Day (Daily Units) Average	Maximum
Rolls for Aluminum Mills	16	30	17	25
Rolls for Steel Mills	6/month	8/month	6/month	8/month
Mechincal Pieces	6/month	10/month	6/month	10/month

SECTION C - WATER SUPPLY & SEWER INFORMATION

1. List average water usage on premises:
[New facilities may estimate]

Type	Average Water Usage (GPD)	Indicate Estimated (E) or Measured (M)
a. Contact cooling water		
b. Non-contact cooling water	40 GPD	E
c. Boiler feed		
d. Process	1550 GPD	E
e. Sanitary	300 GPD	E
f. Air pollution control		
g. Contained in product		
h. Plant and equipment washdown	16 GPD	E
i. Irrigation and lawn watering		
j. Other		
k. TOTAL OF A-J	1906 GPD	E

2. List size, descriptive location, and flow of each facility sewer which connects to the City's sewer system. (If more than three, attach additional information on another sheet.)

Sewer Size	Descriptive Location of Sewer Connection of Discharge Point	Average Flow (GPD)
4"	South East Corner of Building	2000 GPD (Estimated)

SECTION D - WASTEWATER DISCHARGE INFORMATION

1. Does (or will) this facility discharge any wastewater other than from restrooms to the City sewer?

   [ ] Yes If the answer to this question is "yes", complete the remainder of the application.

   [ ] No If the answer to this question is "no", skip to Section I.

2. Provide the following information on wastewater flow rate. [New facilities may estimate]

   a. Hours/Day Discharged (e.g., 8 hours/day):

   M 1 T ___ W 1 TH ___ F 1 SAT ___ SUN ___

   b. Hours of Discharge (e.g., 9 a.m. to 5 p.m.):

   M 8-4 T ___ W 8-4 TH ___ F 8-4 SAT ___ SUN ___

   c. Peak hourly flow rate (GPD) 4,000

   d. Maximum daily flow rate (GPD) 4,000

   e. Annual daily average (GPD) 2,000

3. If batch discharge occurs or will occur, indicate: [New facilities may estimate]

   a. Number of batch discharges 1 per day

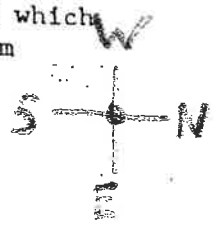
   b. Average discharge per batch 3,500 (GPD)

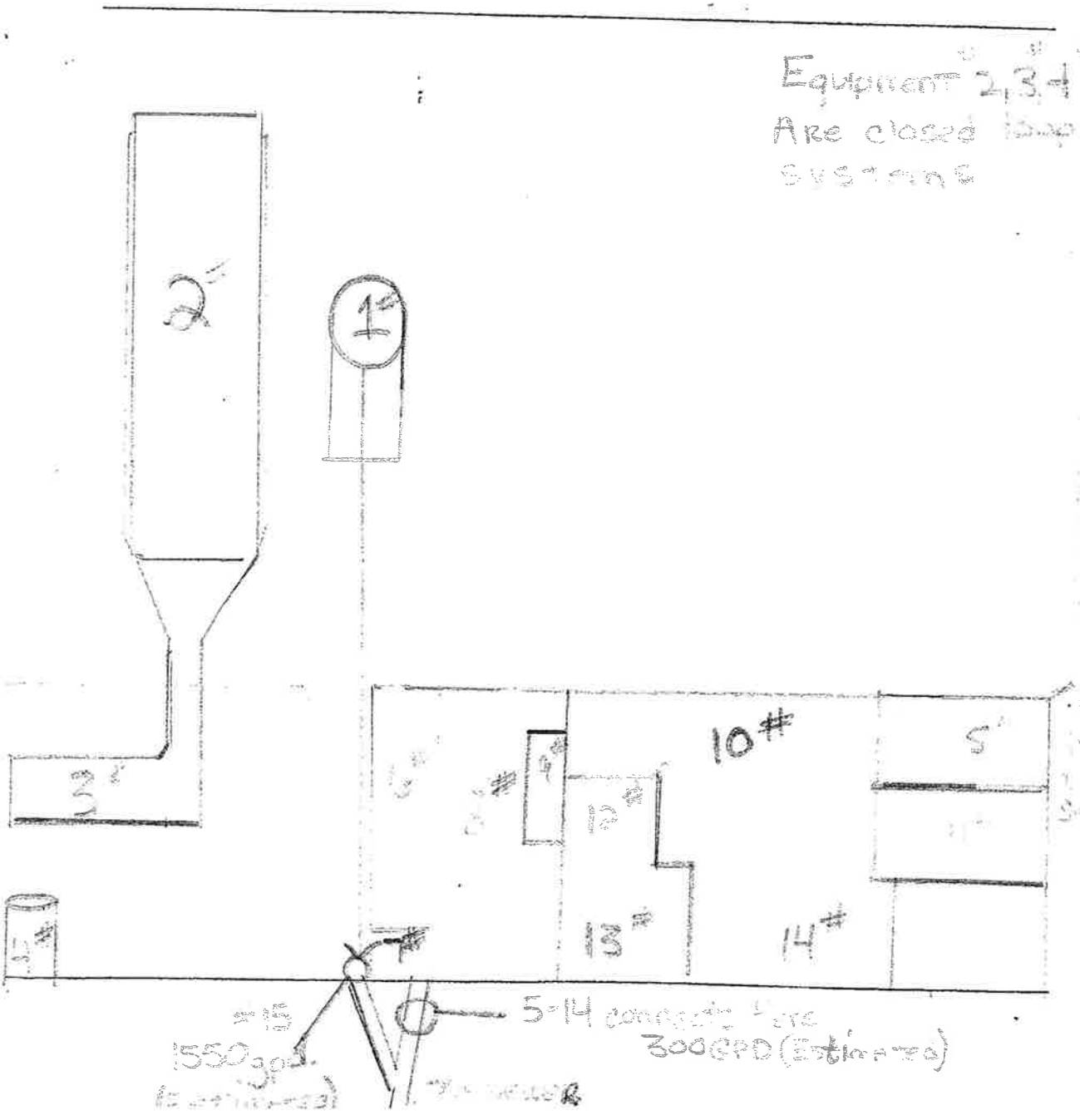
   c. Time of batch discharges Mon-Fri (days of week) at 8am-4pm (hours of day)

   d. Flow rate 65 gpm gallons/minute

   e. Percent of total discharge 75%

4. Schematic Flow Diagram - For each major activity in which wastewater is or will be generated, draw a diagram of the flow of materials, products, water, and wastewater from the start of the activity to its completion, showing all unit processes. Indicate which processes use water and which generate wastestreams. Include the average daily volume and maximum daily volume of each wastestream (new facilities may estimate).





Facilities that checked activities in question 1 of Section B are considered Categorical Industrial Users and should skip to question 6.

5. For Non-Categorical Users Only: List average wastewater discharge, maximum discharge, and type of discharge (batch, continuous, or both), for each plant process. Include the reference number from the process schematic that corresponds to each process. [New facilities should provide estimates for each discharge].

No.	Process Description	Average Flow (GPD)	Maximum Flow (GPD)	Type of Discharge (batch, continuous, none)

ANSWER QUESTIONS 6 & 7 ONLY IF YOU ARE SUBJECT TO CATEGORICAL PRETREATMENT STANDARDS

6. For Categorical Users: Provide the wastewater discharge flows for each of your processes or proposed processes. Include the reference number from the process schematic that corresponds to each process. [New facilities should provide estimates for each discharge].

No.	Regulated Process	Average Flow (GPD)	Maximum Flow (GPD)	Type of Discharge (batch, continuous, none)
1	Rinse Tank Water	1500(E)	6059(E)	Batch

No.	Unregulated Process	Average Flow (GPD)	Maximum Flow (GPD)	Type of Discharge (batch, continuous, none)
2	Women Rest Rm	10	20	Continuous
3	Lunch Rm. Sink	10	20	"
4	Lab Sink	10	20	"
5	Locker Rm. Showers	50	75	"
6	Locker Rm. Sink	100	200	"
7	Locker Rm. toilet	700	1000	"
8	Locker Rm. Urinal	120	200	"

7. For Categorical Users Subject To Total Toxic Organic (TTO) Requirements:

Provide the following (TTO) information.

a. Does (or will) this facility use any of the toxic organics that are listed under the TTO standard of the applicable categorical pretreatment standards published by EPA?

[ ] Yes
[X] No

b. Has a baseline monitoring report (BMR) been submitted which contains TTO information?

[ ] Yes
[X] No

c. Has a toxic organics management plan (TOMP) been developed?

[ ] Yes, (Please attach a copy)
[X] No

8. Do you have, or plan to have, automatic sampling equipment or continuous wastewater flow metering equipment at this facility?

Current:	Flow Metering	[ ] Yes	[✓] No	[ ] N/A
	Sampling Equipment	[ ] Yes	[✓] No	[ ] N/A
Planned:	Flow Metering	[ ] Yes	[✓] No	[ ] N/A
	Sampling Equipment	[ ] Yes	[✓] No	[ ] N/A

If so, please describe the equipment below:

9. Are any process changes or expansions planned during the next three years that could alter wastewater volumes or characteristics? Consider production processes as well as air or water pollution treatment processes that may affect the discharge.

[ ] Yes
[X] No, (skip question 10)

10. Briefly describe these changes and their effects on the wastewater volume and characteristics: (Attach additional sheets if needed.)

SECTION E - CHARACTERISTICS OF DISCHARGE

All current industrial users are required to submit monitoring data on all pollutants that are regulated specific to each process. Use the tables provided in this section to report the analytical results. DO NOT LEAVE BLANKS. For all other (nonregulated) pollutants, indicate whether the pollutant is known to be present (P), suspected to be present (S), or known not to be present (O), by placing the appropriate letter in the column for average reported values. Indicate on either the top of each table, or on a separate sheet, if necessary, the sample location and type of analysis used. Be sure methods conform to 40 CFR Part 136; if they do not, indicate what method was used.

New dischargers should use the table to indicate what pollutants will be present or are suspected to be present in proposed wastestreams by placing a P (expected to be present), S (may be present), or O (will not be present) under the average reported values.

Pollutant	Maximum Daily Value		Average of Analyses		Number of Analyses	Units	
	Conc.	Mass	Conc.	Mass		Conc.	Mass
Acenaphthene			0				
Acrolein							
Acrylonitrile							
Benzene							
Benzidine							
Carbon tetrachloride							
Chlorobenzene							
1,2,4-Trichlorobenzene							
Hexachlorobenzene							
1,2-Dichloroethane							
1,1,1-Trichloroethane							
Hexachloroethane							
1,1-Dichloroethane							
1,1,2-Trichloroethane							
1,1,2,2-Tetrachloroethane							
Chloroethane							
Bis(2-chloroethyl) ether							
17 Bis (chloro methyl) ether							
2-Chloroethyl vinyl ether							
2-Chloronaphthalene							
2,4,6-Trichlorophenol							
Parachlorometa cresol							
Chloroform							
2-Chlorophenol							
1,2-Dichlorobenzene							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
3,3-Dichlorobenzidine							
1,1-Dichloroethylene							
1,2-Trans-dichloroethylene							
2,4-Dichloropheno							
1,2-Dichloropropane							
1,2-Dichloropropylene							
1,3-Dichloropropylene							

Pollutant	Maximum Daily Value		Average of Analyses		Number of Analyses	Units	
	Conc.	Mass	Conc.	Mass		Conc.	Mass
2,4-Dimethylphenol							
2,4-Dinitrotoluene							
2,6-Dinitrotoluene							
1,2-Diphenylhydrazine							
Ethylbenzene							
Fluoranthene							
4-Chlorophenyl phenyl ether							
4-Bromophenyl phenyl ether							
Bis(2-chlorisopropyl) ether							
Bis(2-chloroethoxy) methane							
Methylene chloride							
Methyl chloride							
Methyl bromide							
Bromoform							
Dichlorobromomethane							
Chlorodibromomethane							
Hexachlorobutadiene							
Hexachlorocyclopentadiene							
Isophorone							
Naphthalene							
Nitrobenzene							
Nitrophenol							
2-Nitrophenol							
4-Nitrophenol							
2,4-Dinitrophenol							
4,6-Dinitro-o-cresol							
N-nitrosodimethylamine							
N-nitrosodiphenylamine							
N-nitrosodi-n-propylamine							
Pentachlorophenol							
Phenol							
Bis(2-ethylhexyl) phthalate							
Butyl benzyl phthalate							
Di-n-butyl phthalate							

Pollutant	Maximum Daily Value		Average of Analyses		Number of Analyses	Units	
	Conc.	Mass	Conc.	Mass		Conc.	Mass
Di-n-octyl phthalate			0				
Diethyl phthalate							
Dimethyl phthalate							
Benzo(a)anthracene							
Benzo(a)pyrene							
3,4-benzofluoranthene							
Benzo(k) fluoranthane							
Chrysene							
Acenaphthylene							
Anthracene							
Benzo(ghi)perylene							
Fluorene							
Phenanthrene							
Dibenzo(a,h)anthracene							
Indeno(1,2,3-cd)pyrene							
Pyrene							
Tetrachloroethylene							
Toluene							
Trichloroethylene							
Vinyl chloride							
Aldrin							
Dieldrin							
Chlordane							
4,4'-DDT							
4,4'-DDE							
4,4'-DDD							
Alpha-endosulfan							
Beta-endosulfan							
Endosulfan sulfate							
Endrin							
Endrin aldehyde							
Heptachlor							

Pollutant	Maximum Daily Value		Average of Analyses		Number of Analyses	Units	
	Conc.	Mass	Conc.	Mass		Conc.	Mass
Heptachlor epoxide			0				
Alpha-BHC			0				
Beta-BHC			0				
Gamma-BHC			0				
Delta-BHC			0				
PCB-1242			0				
PCB-1254			0				
PCB-1221			0				
PCB-1232			0				
PCB-1248			0				
PCB-1260			0				
PCB-1016			0				
Toxaphene			0				
(TCDD)			0				
Asbestos			0				
Acidity			0				
Alkalinity			0				
Bacteria			0				
BOD_5			0				
COD			0				
Chloride			0				
Chlorine			0				
Flouride			0				
Hardness			0				
Magnesium			0				
NH_3-N			0				
Oil and Grease			0				
TSS			0				
TOC			0				
Kjeldahl N			0				
Nitrate N			0				
Nitrite N			0				
Organic N			0				
Orthophosphate P			0				
Phosphorous			0				

Pollutant	Maximum Daily Value		Average of Analyses		Number of Analyses	Units	
	Conc.	Mass	Conc.	Mass		Conc.	Mass
Sodium			0				
Specific Conductivity			0				
Sulfate (SO_4)			0				
Sulfide (S)			0				
Sulfite (SO_3)			0				
Antimony			0				
Arsenic			0				
Barium			0				
Beryllium			0				
Cadmium			0				
Chromium			1				
Copper			1				
Cyanide			1				
Lead			1				
Mercury			1				
Nickel			1				
Selenium			1				
Silver			1				
Thallium			1				
Zinc			1				

SECTION F - TREATMENT

1. Is any form of wastewater treatment practiced at this facility?

[ ] Yes
[X] No

2. Is any form of wastewater treatment (or changes to a existing wastewater treatment) planned for this facility within the next three years?

[ ] Yes, describe: _____
[X] No

3. Attach a process flow diagram for each existing treatment system. Include process equipment, by-products, by-product disposal method, waste and by-product volumes, and design and operating conditions.

4. Describe any changes in treatment or disposal methods planned or under construction for the wastewater discharge to the sanitary sewer. Please include estimated completion dates.

_____

_____

_____

_____

5. Do you have a treatment operator? [ ] Yes [X] No

(if Yes,) Name: _____
Title: _____

Phone: _____

Full time: _____ (specify hours)

Part time: _____ (specify hours)

6. Do you have a manual on the correct operation of your treatment equipment?
[ ] Yes [X] No

7. Do you have a written maintenance schedule for your treatment equipment?
[ ] Yes [X] No

SECTION G - FACILITY OPERATIONAL CHARACTERISTICS

1. Shift Information

Work Days		[ ] Mon.	[ ] Tues.	[ ] Wed.	[ ] Thur.	[ ] Fri.	[ ] Sat.	[ ] Sun.
Shifts per work day:		2	2	2	2	2	1	1
Empl's per shift:	1st	6	6	6	6	6	2	2
	2nd	2	2	2	2	2	2	2
	3rd							
Shift start and end times:	1st	7a-4p	7a-4p	7a-4p	7a-4p	7a-4p	12p-6p	12p-6p
	2nd	4pm-12am	4p-12a	4p-12a	4p-12a	4p-12a	—	—
	3rd							

2. Indicate whether the business activity is:

[X] Continuous through the year, or
[ ] Seasonal - Circle the months of the year during which the business activity occurs:

J F M A M J J A S O N D

COMMENTS: _____

3. Indicate whether the facility discharge is:

[X] Continuous through the year, or
[ ] Seasonal - Circle the months of the year during which the business activity occurs:

J F M A M J J A S O N D

COMMENTS: _____

4. Does operation shut down for vacation, maintenance, or other reasons?

[ ] Yes, indicate reasons and period when shutdown occurs:

☒ No

5. List types and amounts (mass or volume per day) of raw materials used or planned for use (attach list if needed):

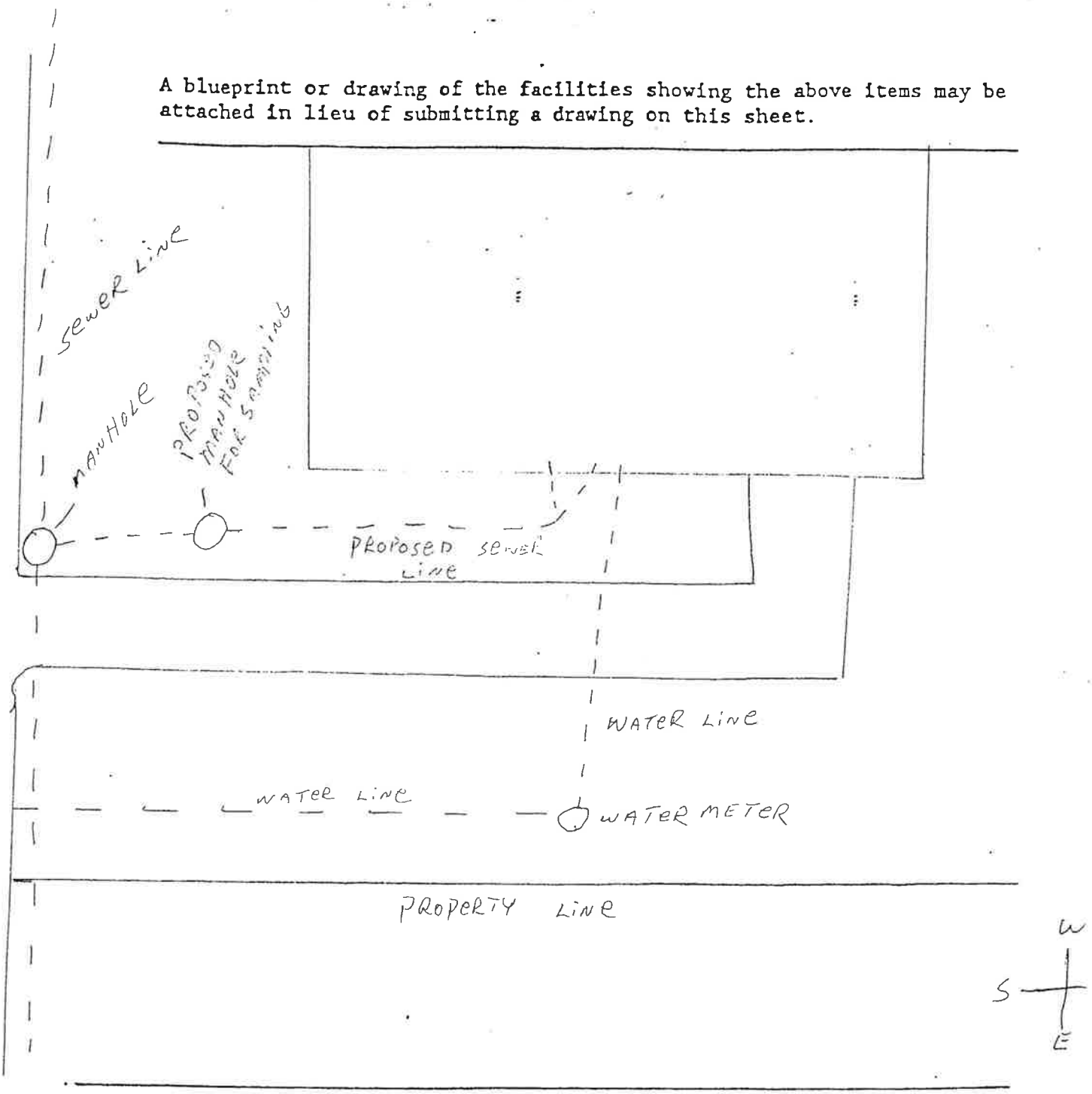
Chromic Acid - Flake
Sulfuric Acid
Naphtalene Red

6. List types and quantity of chemicals used or planned for use (attach list if needed). Include copies of Manufacturer's Safety Data Sheets (if available) for all chemicals identified:

Chemical	Quantity
See Attached List	

7. Building Layout - Draw to scale the location of each building on the premises. Show map orientation and location of all water meters, storm drains, numbered unit processes (from schematic flow diagram), public sewers, and each facility sewer line connected to the public sewers. Show existing and proposed sampling locations.

A blueprint or drawing of the facilities showing the above items may be attached in lieu of submitting a drawing on this sheet.



SECTION H - AUTHORIZED SIGNATURES

Compliance certification:

1. Are all applicable Federal, State, or local pretreatment standards and requirements being met on a consistent basis?

   Yes [X] No [ ] Not yet discharging [ ]

2. If No:

   a. What additional operations and maintenance procedures are being considered to bring the facility into compliance? Also, list additional treatment technology or practice being considered in order to bring the facility into compliance.

   b. Provide a schedule for bringing the facility into compliance. Specify major events planned along with reasonable completion dates. Note that if the Control Authority issues a permit to the applicant, it may establish a schedule for compliance different from the one submitted by the facility.

Milestone Activity	Completion Date

Authorized Representative Statement:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Greg Boyd — Environmental Health & Safety

Name(s) — Title

Greg Boyd — 12-1707 — 270-274-3504

Signature — Date — Phone

MANUFACTURERS

The National Colloid Company

INDUSTRIAL WATER CONDITIONING PRODUCTS
CHEMICALS AND SERVICES

906 ADAMS STREET

PHONE 614 - 282-1171

DISTRIBUTORS

STEUBENVILLE, OHIO 43952

NATCOLENE APD

APD is an economical, highly effective biodegradable liquid detergent specially formulated for industry. APD quickly cuts grease, oils and various industrial soils so that they can be easily rinsed or wiped away without filming or hazing.

Typical Characteristics

APPEARANCE	Clear Liquid
PH	10.0
SPECIFIC GRAVITY	1.1
SOLUBILITY IN H_2O	Complete
BOILING POINT	200°F
FREEZING POINT	32°F
WEIGHT PER GALLON	8.8 lbs.
FLASH PT	NONE
FIRE PT	NONE
FOAM TENDENCIES	MODERATE
ODOR	MILD SANITARY
BIODEGRADABLE	100%
RINSE ABILITY	EXCELLENT

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY (As Used on Label and List)
NATCOLENE APD D 212

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufacturer's Name THE NATIONAL COLLOID COMPANY	Emergency Telephone Number 1-800-424-9300 CHEMTREC
Address (Number, Street, City, State, and ZIP Code) 906 ADAMS STREET; P.O. BOX 309	Telephone Number for Information 1-614-282-1171
STEUBENVILLE, OH 43952	Date Prepared 12/1/94 (REVISED)
	Signature of Preparer (optional)

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
SODIUM METASILICATE	CAS# 6834-92-0			5 - 10
POTASSIUM PYROPHOSPHATE	CAS# 7320-34-5			5 - 10
ALCOHOLS, C_{11}-C_{15}-SECONDARY, ETHOXYLATED	CAS# 68131-40-8			0 - 5
HEXYLENE GLYCOL	CAS# 107-41-5	25		10 - 15

Section III — Physical/Chemical Characteristics

Boiling Point	200	Specific Gravity (H_2O = 1)	1.1
Vapor Pressure (mm Hg.)	N/A	Melting Point	N/A
Vapor Density (AIR = 1)	N/A	Evaporation Rate (Butyl Acetate = 1)	N/A
Solubility in Water	COMPLETE		
Appearance and Odor	CLEAR LIQUID		

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits	LEL	UEL
NONE			

Extinguishing Media
NOT FLAMMABLE OR COMBUSTIBLE

Special Fire Fighting Procedures
NONE

Unusual Fire and Explosion Hazards
NONE

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To [illegible] | From [illegible]

60646

Section V — Reactivity Data

Stability	Unstable		Conditions to Avoid NONE
	Stable	X	

Incompatibility (Materials to Avoid)
ACIDS

Hazardous Decomposition or Byproducts
N/A

Hazardous Polymerization	May Occur		Conditions to Avoid NONE
	Will Not Occur	X	

Section VI — Health Hazard Data

Route(s) of Entry: Inhalation? Skin? X Ingestion? X

Health Hazards (Acute and Chronic)

Carcinogenicity: NTP? IARC Monographs? OSHA Regulated?

Signs and Symptoms of Exposure
SKIN: PROLONGED CONTACT WITH CONCENTRATED PRODUCT WILL REDDEN AND IRRITATE NORMAL SKIN.
EYES: IRRITATION AND BURNING SENSATION.

Medical Conditions
Generally Aggravated by Exposure

Emergency and First Aid Procedures
SKIN: WASH WITH WATER. EYES: FLUSH WITH WATER FOR AT LEAST 15 MINUTES, CALL A PHYSICIAN. INGESTION: WATER OR MILK WITH DILUTE VINEGAR OR LEMON JUICE.

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material Is Released or Spilled
FLUSH WITH WATER.

Waste Disposal Method
FLUSH AWAY, SURFACTANTS AND HEXYLENE GLYCOL ARE BIODEGRADABLE IN BIOLOGICAL WASTEWATER TREATMENT PLANTS.

Precautions to Be Taken in Handling and Storing
NONE

Other Precautions
TREAT AS ALKALI. AVOID CONTACT WITH EYES AND UNNECESSARY CONTACT WITH SKIN.
DO NOT TAKE INTERNALLY.

Section VIII — Control Measures

Respiratory Protection (Specify Type)
NONE

Ventilation	Local Exhaust	Special
	Mechanical (General)	Other

Protective Gloves
RUBBER OR PLASTIC

Eye Protection
SAFETY GLASSES OR MONOGOGGLES

Other Protective Clothing or Equipment
NONE

Work/Hygienic Practices

MARSULEX

MATERIAL SAFETY DATA SHEET

Sulfuric Acid

POTENTIAL HEALTH EFFECTS:

Exposure Limits:

	ACGIH (TLV)	OSHA (PEL)
Sulfuric Acid	1 mg/m^3 (TWA)	1 mg/m^3 (TWA)
	3 mg/m^3 (STEL)	

In contact with the skin: Concentrated solution may cause pain and severe burns to the skin and brownish or yellow stains. Prolonged and repeated exposure to dilute solutions may cause irritation, redness, pain and drying and cracking of the skin.

Δ **In contact with the eyes:** Immediate pain, severe burns and corneal damage which may result in permanent blindness.

Inhaled: Mists and vapors may cause irritation of the eyes, nose and respiratory tract. May cause increased pulmonary resistance, transient cough and bronchoconstriction. Severe overexposure may result in lung collapse and pulmonary edema which can be fatal.

Ingested: Severe burning and pain in the mouth, throat and abdomen. Vomiting, diarrhea and perforation of the esophagus and stomach lining may occur.

Long Term Exposure:

Repeated exposure may produce erosion and discoloration of teeth.

Although no direct link has been established between exposure to sulfuric acid, itself, and cancer in man, the World Health Organization (WHO) International Agency for Research on Cancer (IARC) have concluded that occupational exposure to strong inorganic acid mists containing sulfuric acid is carcinogenic to man, causing cancer of the larynx (the voice box) and, to a lesser extent, the lung. Exposure to any mist or aerosol during the use of this product should be avoided and, in any case, keep exposures below the occupational exposure limit for sulfuric acid.

Corrosive effects on the skin and eyes may be delayed, and damage may occur without the sensation or onset of pain. Repeated overexposure may lead to contact dermatitis, may cause bronchitis with cough, phlegm, shortness of breath and emphysema, can cause chronic runny nose, tearing of the eyes, nosebleeds and stomach upsets. Strict adherence to first aid measures following any exposure is essential.

Existing Medical Conditions Possibly Aggravated By Exposure: Skin irritation may be aggravated in individuals with existing skin lesions. Breathing of vapors or sprays (mists) may aggravate acute or chronic asthma and chronic pulmonary disease such as emphysema and bronchitis.

Carcinogenicity Data: Although there are reports linking exposure to sulfuric acid to cancer, this product is not classified by NTP (National Toxicology Program), not regulated as carcinogenic by OSHA (Occupational Safety and Health Administration), and has not been evaluated by IARC (International Agency for Research on Cancer) or ACGIH (American Conference of Governmental Industrial Hygienists). (See also, Long Term Exposure).

MARSULEX

Sulfuric Acid

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Sulfuric Acid
Chemical Name: Sulfuric Acid
Formula: H_2SO_4
Chemical Family: Inorganic Acid
Molecular Weight: 98.08
CAS# 7664-93 9
Synonyms: Sulphuric Acid, Oil of Vitriol, Battery Acid
Product Use: Used in manufacture of fertilizers, explosives, other acids, metal pickling and petroleum processing.

MARSULEX Inc.
111 Gordon Baker Road
Suite 300
North York, ONT
M2H 3R1
(416) 496-9655

MARSULEX Inc.
3379 Peachtree Rd NE
Suite 350
Atlanta, GA
30326
(800) 241-1912

Emergency Telephone Number
Chemtrec 1-800-424-9300
Canutec (613) 996-6666

Δ Prepared by ENVIROME INC. for MARSULEX Technical Section (416) 496-9655.

2. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Ingredients	% by Wt.	CAS Number
Sulfuric Acid	70-100%	7664-93-9
Non-Hazardous Ingredients		
Water	0-30%	7732-18-5

3. HAZARD INFORMATION

EMERGENCY OVERVIEW:

Δ Danger! **Extremely corrosive. Causes severe burns. Reacts violently with water. Concentrated Sulfuric Acid will react with many organic materials and may cause fire due to the heat of the reaction. Not flammable, but reacts with most metals to form explosive hydrogen gas.**

Sulfuric Acid is a colorless to amber, clear to slightly cloudy, oily liquid.

National Fire Protection Association (NFPA) Rating
Hazardous Materials Identification System (HMIS) Rating

	NFPA	HMIS
HEALTH	3	3
FIRE	0	0
REACTIVITY	2	2
SPECIAL	W	

4 – Extreme/Severe
3 – High/Serious
2 – Moderate
1 – Slight
0 – Minimum
W – Water Reactive

3. HAZARD INFORMATION (continued)

4. FIRST AID MEASURES

Prompt removal of this material from contact with the body is of utmost importance. START FIRST AID AT ONCE.

Precaution: Persons attending the victim should avoid direct contact with heavily contaminated clothing and vomitus. Wear impervious gloves while decontaminating skin and hair.

In contact with the skin: Flush skin with running water for a **minimum** of 20 minutes. Start flushing while removing contaminated clothing. If irritation persists, repeat flushing. Obtain medical attention IMMEDIATELY. Do not transport victim unless the recommended flushing period is completed or flushing can be continued during transport.

While the patient is being transported to a medical facility, apply compresses of iced water. If medical treatment must be delayed, immerse the affected area in iced water. If immersion is not practical, compresses of iced water can be applied. Avoid freezing tissues.

Discard heavily contaminated clothing and shoes in a manner which limits further exposure. Otherwise, wash clothing separately before reuse.

In contact with the eyes: Immediately flush eyes with running water for a **minimum** of 20 minutes. Hold eyelids open during flushing. If irritation persists, repeat flushing. Obtain medical attention IMMEDIATELY. Do not transport victim until the recommended flushing period is completed unless flushing can be continued during transport.

Inhaled: Move victim to fresh air. Give artificial respiration ONLY if breathing has stopped. Give Cardiopulmonary Resuscitation (CPR) if there is no breathing AND no pulse. Obtain medical attention IMMEDIATELY

Δ Ingested: DO NOT INDUCE VOMITING. If victim is alert and not convulsing, rinse mouth and give ½ to 1 glass of water to dilute material. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water. IMMEDIATELY contact local poison control center. Vomiting may need to be induced but should be directed by a physician or a poison control center. IMMEDIATELY transport victim to an emergency facility.

Δ Note to Physician: DO NOT attempt to neutralize the acid with weak bases since the reaction will produce heat that may extend the corrosive injury. Since reexposure of the mucosa to acid is harmful, be careful to avoid further vomiting and limit fluid to one or two glasses in an adult.

All treatments should be based on observed signs and symptoms of distress in the patient. Medical conditions that may be aggravated by exposure include asthma, bronchitis, emphysema and other lung diseases and chronic nose, sinus or throat conditions. Severity of the burn is generally determined by the concentration of the solution and the duration of exposure. In the event of skin or eye contact, immediate and thorough flushing is essential. Continued washing of the effected area with cold or iced water will be helpful in removing the last traces of sulfuric acid. Cream or ointments should not be applied before or during the washing phase of the treatment.

5. FIRE FIGHTING MEASURES

Flash Point (method): Not applicable, product is non-flammable
Autoignition Temperature: Not combustible
Flammability Limits in air(%): UEL: Not applicable LEL: Not applicable

Fire Extinguishing Media: For small fires use dry chemical or carbon dioxide. For large fires, flood fire area with water from a distance. Expect violent reaction with water. Do not get solid stream of water on spilled material

Special Fire Fighting Procedures: Wear a NIOSH/MSHA approved self-contained breathing apparatus if vapors or mists are present and full protective clothing. For fighting fires in close proximity to spill or vapors, use acid-resistant personal protective equipment. Evacuate residents who are downwind of fire. Prevent unauthorized entry to fire area. Dike area to contain runoff and prevent contamination of water sources. Neutralize runoff with lime, soda ash or other suitable neutralizing agents (see Deactivating Chemicals, Section 6). Cool containers that are exposed to flame with streams of water until fire is out.

Other Fire or Explosion Hazards: Not flammable but highly reactive. Capable of igniting finely divided combustible materials on contact. Reacts violently with water and organic materials with evolution of heat. Extremely hazardous in contact with many materials, particularly carbides, chlorates, fulminates, nitrates and picrates. Sulfuric acid reacts with most metals, especially when dilute to give flammable, potentially explosive hydrogen gas. Hydrogen gas can accumulate to explosive concentrations inside confined spaces. Follow appropriate NFPA codes.

6. ACCIDENTAL RELEASE MEASURES

Steps to be taken in the event of a spill or leak: Remove all ignition sources. Ventilate area. Use appropriate Personal Protection Equipment. Prevent liquid from entering sewers or waterways. Dike with inert material (sand, earth, etc.). Stop or reduce leak if safe to do so. Collect into containers for reclamation or disposal only if container is suitable to withstand the material. Consider insitu neutralization and disposal. Ensure adequate decontamination of tools and equipment following clean up. Comply with Federal, Provincial/State and local regulations on reporting releases.

Deactivating Chemicals: Lime, limestone, sodium carbonate (soda ash), sodium bicarbonate, dilute sodium hydroxide, dilute aqua ammonia.

Waste Disposal Methods: Dispose of waste material at an approved waste treatment/disposal facility, in accordance with applicable regulations. Do not dispose of waste with normal garbage or to sewer systems.

Note - Clean-up material may be a RCRA Hazardous Waste on disposal.
- Spills are subject to CERCLA reporting requirements: RQ – 1000 lbs.

7. HANDLING AND STORAGE

Precautions: Wear appropriate Personal Protection Equipment. Do not breath sprays or mists. Do not ingest. Do not get in eyes, on skin or on clothing. Keep ignition sources away from sulfuric acid storage, handling and transportation equipment.

Handling Procedures and Equipment: Carbon steel or stainless steel materials are suitable for use for acid concentrations equal to or greater than 93%. However, the effect of lower concentrations on the materials of construction can be very complex. Contact product supplier for specific recommendations when handling sulfuric acid at strengths less than 77%.

Storage Temperature: Store above freezing point (Section 9). Elevated temperatures will increase the corrosion rate of most metals.

Storage Requirements: Store packaged acid in a dry, well, ventilated location away from combustibles, oxidizers, bases, or metallic powders. Storage tanks should be protected from water ingress, be well ventilated, and maintained structurally in a safe and reliable condition.

Other Precautions: Sulfuric acid will attack some forms of plastics and coatings. Always add acid to water -not water to acid. If kept in upper floors of building, floors should be acid proof with drains to a recovery tank.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Recommendations listed in this section indicate the type of equipment which will provide protection against over exposure to this product. Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.

Engineering Controls: Local exhaust ventilation required.

Respiratory Protection: A NIOSH/MSHA approved air-purifying respirator equipped with acid gas/fume, dust, mist cartridges for concentrations up to 10 mg/m^3 An air-supplied respirator if concentrations are higher or unknown

Skin Protection: Impervious (i.e., neoprene, PVC) gloves, coveralls, boots and/or other acid resistant protective clothing.

Eye Protection: Tight-fitting chemical goggles and face shield.

Other Personal Protective Equipment: Where there is a danger of spilling or splashing, acid resistant aprons or suits should be worn. Trouser legs should be worn outside (not tucked in) rubber boots. Safety showers and eyewash fountains should be installed in storage and handling areas.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid

Appearance and Odor: Sulfuric acid is a clear to amber, heavy, oily liquid which may have a sharp penetrating odor

Odor Threshold: No data

Boiling Point: 77.67%: 193°C (380°F); 93.19%: 276°C (529°F); 98%: 330°C (626°F)

Melting/Freezing Point: 77.67%: -11.2°C (+11.6°F); 93.19%: -29.5°C (-21.1°F); 98%: -1.1°C (30°F)

Vapor Pressure at 40°C (102°F): 77.67%: 1.2 mmHg; 93.19%: 0.0016 mmHg, 98%: 0.002 mmHg

Specific Gravity at 15°C (60°F): 77.67%: 1.7059; 93.19%: 1.8354; 98%: 1.8437

Vapor Density: (Air=1): 3.4 sulfuric acid component

Bulk Density: Not applicable (see specific gravity)

Evaporation Rate: Not applicable

Solubility: Miscible in all proportions in water.

pH: 0.3 (1N solution at 25°C/78°F)

10. STABILITY AND REACTIVITY

Stability:

Under Normal Conditions: Stable, but reacts violently with water and organic materials with evolution of heat

Under Fire Conditions: Decomposes to form sulfur oxides(SO_x)

Conditions to Avoid: Temperatures which may have a negative effect on the materials of construction used in equipment.

Materials to Avoid: Contact with organic materials (such as chlorates, carbides, fulminates and picrates) may cause fire and explosions. Contact with metals may produce flammable hydrogen gas. When diluting, add acid to water. Do NOT add water to the acid.

Hazardous Decomposition or Combustion Products: Toxic gases and vapors (e.g. sulfur dioxide, sulfuric acid vapors/mists and sulfur trioxide) may be released when sulfuric acid decomposes.

Hazardous Polymerization: Will not occur

11. TOXICOLOGICAL INFORMATION

Toxicological Data: LD_{50} (oral, rat) = 2140 mg/kg

LC_{50} (inhalation, rat) = 510 mg/m^3 for 2 hrs

Skin effects (rabbit): Severe irritation

Eye effects (rabbit): Severe irritation

11. TOXICOLOGICAL INFORMATION (continued)

Δ **Carcinogenicity Data:** Although there are reports linking exposure to sulfuric acid to cancer, this product is not classified by NTP (National Toxicology Program), not regulated as carcinogenic by OSHA (Occupational Safety and Health Administration), and has not been evaluated by IARC (International Agency for Research on Cancer)** or ACGIH (American Conference of Governmental Industrial Hygienists). See Section 3. Hazard Information, regarding Potential Health Effects (Long Term Exposure) for further discussion

Δ ** Although no direct link has been established between exposure to sulfuric acid, itself, and cancer in man, the World Health Organization (WHO) International Agency for Research on Cancer (IARC) have concluded that occupational exposure to strong inorganic acid mists containing sulfuric acid is carcinogenic to man.

Reproductive Effects: No information is available and no adverse reproductive effects are anticipated.

Mutagenicity Data: No information is available and no adverse mutagenic effects are anticipated.

Teratogenicity Data: No information is available and no adverse teratogenic effects are anticipated.

Synergistic Materials: None known

12. ECOLOGICAL INFORMATION

Ecotoxic Effects: Harmful to aquatic life in very low concentrations. May be dangerous if it enters water intake. Fish toxicity critical concentration = 10 mg/l ; 7.34 mg/l /48 hrs - Lymneae Palustris - 0-100% mortality.

13. DISPOSAL CONSIDERATIONS

- Responsibility for proper waste disposal is with the owner of the waste. Work with the appropriate regulatory bodies to ensure compliance with regulations.
- Consider the collection of residual sulfuric acid into containers for reclamation or disposal only if the container is suitable to withstand the material.
- Consider Insitu neutralization and disposal
- Clean-up material may be a RCRA Hazardous Waste on disposal.
- Provincial/State or local regulations or restrictions are complex and may differ from Federal regulations.
- The information applies to the material as manufactured; processing, neutralizing, use or contamination may make the information inappropriate, inaccurate or incomplete.

14. TRANSPORT INFORMATION

U.S. (Under DOT)

Shipping Name: RQ Sulfuric acid
Hazard Class or Division: 8
Product Identification No. (PIN): UN1830
Packing Group: II

Canada (Under TC)

Shipping Name: Sulphuric acid
Classification(s): Class 8 (9.2)
Product Identification No. (PIN): UN1830
Packing Group: II

15. REGULATORY INFORMATION

U.S.A.

SARA Title III HAZARD CATEGORIES AND LISTS

Product Hazard Categories		Lists	
Acute (Immediate) Health:	Yes	Extremely Hazardous Substance (40 CFR 355, SARA Title III Section 302)	Yes
Chronic (Delayed) Health:	Yes		
Fire:	No	CERCLA Hazardous Substance (40 CFR 302.4)	Yes
Reactivity:	Yes		
Sudden Release of Pressure:	No	Toxic Chemical (40 CFR 372.65, SARA Title III Section 313)	Yes

Reportable Quantity (RQ) under U.S. EPA CERCLA: RQ=1000 lb

TSCA Inventory Status: Reported/Included

CANADA

Workplace Hazardous Materials Information System (WHMIS)

Δ WHMIS Classification(s): Class D1A - Very Toxic:
Class E - Corrosive

WHMIS Health Effects Index: Acute Lethality - very toxic - immediate
Corrosive to animal skin

WHMIS Ingredient Disclosure List: Confirmed A. Meets criteria for disclosure at 1% or greater

Reportable Quantity (RQ) under Transport Canada - TDG:
RQ=5 litres (or Kg) if it represents a danger to health, life, property or the environment.

16. OTHER INFORMATION

Additional Information and References

1. Enviro-TIPS Manual, "Sulphuric Acid and Oleum", Environment Canada, February 1984.
2. Weast, R.C. (Ed.), "CRC Handbook of Chemistry and Physics", 60th Edition (1980)
3. Sax, N.I., "Dangerous Properties of Industrial Materials", 7th Edition (1989)
4. ACGIH, "Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices", 1993-94
5. Sittig, Marshall, "Handbook of Toxic and Hazardous Chemicals and Carcinogens", 2nd Edition, 1985
6. IARC monographs on the evaluation of carcinoginic risks to humans. Volume 54 (H_2SO_4).
7. CCOHS/NIOSH RTECS CD-ROM 1994.

Revision Indicators:

Δ in the left margin indicates a revision or addition of information since the previous issue.

16. OTHER INFORMATION (continued)

Legend:

CAS #	- Chemical Abstracts Service Registry Number
CERCLA	- Comprehensive Environmental Response, Compensation, and Liability Act
CFR	- Code of Federal Regulations
DOT	- Department of Transportation
EPA	- Environmental Protection Agency
LC_{50}	- The concentration of material in air expected to kill 50% of a group of test animals
LD_{50}	- Lethal Dose expected to kill 50% of a group of test animals
LEL	- Lower Explosive Limit
MSHA	- Mine Safety and Health Administration
NIOSH	- National Institute for Occupational Safety and Health
PEL	- Permissible Exposure Limit
PVC	- Polyvinyl chloride
RCRA	- Resource Conservation and Recovery Act
SARA	- Superfund Amendments and Reauthorization Act of the U.S. EPA
STEL	- Short Term Exposure Limit
TC	- Transport Canada
TDG	- Transportation of Dangerous Goods Act/Regulations
TLV	- Threshold Limit Value
TSCA	- Toxic Substances Control Act
TWA	- Time-Weighted Average
UEL	- Upper Explosive Limit

MATERIAL SAFETY DATA SHEET

ATOTECH USA INC.
1750 OVERVIEW DRIVE
ROCK HILL, S.C. 29730

EMERGENCY TELEPHONE NUMBER
8:00 am - 5:00 pm
(803) 817-3500

CHEMTREC - 24 HOURS
1-800-424-9300

NAME USED ON LABEL: Chromic Acid Flake
CHEMICAL NAME (if single substance): Chromium Trioxide
CHEMICAL FAMILY: Chromate, Hexavalent
FORMULA: CrO_3

HAZARDOUS INGREDIENTS

IDENTITY	CAS No.	%	EXPOSURE LIMITS
Chromium Trioxide	1333-82-0	>95	ACGIH-TWA(1): 0.05 mg/m3 OSHA-PEL(2): 0.5 mg/m3 OSHA-C(3): 1 mg/10m3

(1) CHROMIUM, WATER-SOLUBLE CR VI COMPOUNDS, NOC
(2) CHROMIUM, SOL. CHROMIC, CHROMOUS SALTS (AS CR)
(3) Acceptable Ceiling Concentration.

PHYSICAL DATA

BOILING POINT: N/APP
SPECIFIC GRAVITY: 2.7
VAPOR DENSITY (Air=1): N/APP
% VOLATILE: N/APP
pH: ~1 (1% aq. soln)

MELTING POINT: 197 deg C
VAPOR PRESSURE @ 20 C: N/APP
SOLUBILITY IN WATER: Complete
EVAPORATION RATE (Butyl Acetate=1): N/APP

APPEARANCE: Solid dark red flakes or powder with no odor.

FIRE AND EXPLOSION DATA

FLASH POINT (Test Method)	AUTOIGNITION TEMPERATURE	FLAMMABLE LTS.
N/APP	N/APP	LEL- N/APP UEL- N/APP

EXTINGUISHING MEDIA: Nonflammable / noncombustible -- Use extinguishing media appropriate to surrounding fire conditions.

SPECIAL FIRE FIGHTING PROCEDURES: Do not get material on skin or clothing. Avoid inhalation of fumes or mists. Stay upwind, out of low areas, and ventilate closed spaces before entering. Cool containers from the side with water until fire is out. Use water

*N/A = NOT AVAILABLE
**N/APP = NOT APPLICABLE
***N/E = NOT ESTABLISHED

spray to reduce vapor; do not put water directly on leak or spill area. Wear full protective clothing and NIOSH-approved, self-contained breathing apparatus (SCBA) with full facepiece operated in the pressure demand or other positive pressure mode. Move containers from fire area, if possible to do so without risk.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Under fire conditions, decomposing material may produce chromic oxide and oxygen. Oxidizer! Avoid contact with organic materials and readily oxidizable or combustible material.

****

HEALTH HAZARD DATA

****

EYE CONTACT: Can cause severe burns and possible permanent damage to eyes.

SKIN CONTACT: Contact can cause severe burns. Contact with broken skin may lead to formation of firmly marginated "chrome sore". May rarely cause allergic contact dermatitis. Dermal absorption of large amounts may result in kidney failure and death.

INHALATION: Can cause severe irritation and burns to the respiratory tract, including the nose, airway, and lungs.

INGESTION: Toxic. Harmful or fatal if swallowed. Can cause severe tissue destruction. Kidney failure may follow and result in death. May cause liver damage.

CHRONIC TOXICITY: Prolonged or repeated contact may cause conjunctivitis, "chrome sores" on skin (especially broken skin), or ulceration and perforation of the nasal septum.

CARCINOGENICITY:

	NTP	IARC	ACGIH
Yes	X	X	X
No			

The National Toxicology Program (NTP) has designated Hexavalent Chromium compounds as Known Human Carcinogens. The International Agency for Research on Cancer (IARC) has identified Hexavalent Chromium Compounds as Carcinogenic to Humans (Group 1). The American Conference of Governmental Industrial Hygienists (ACGIH) has identified Water-Soluble Hexavalent chromium compounds as a Confirmed Carcinogen.

*N/A = NOT AVAILABLE
**N/APP = NOT APPLICABLE
***N/E = NOT ESTABLISHED

NAME USED ON LABEL: Chromic Acid Flake

SUGGESTED FIRST AID

EYES: Immediately flush eyes with plenty of water for at least 15 minutes forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissue. Get immediate medical attention.

SKIN: Immediately flush skin with plenty of water while removing contaminated clothing and shoes. Get immediate medical attention. Contaminated clothing should be taken off/removed in a manner which limits further exposure.

INHALATION: Remove to fresh air. If not breathing, give artificial respiration and/or if breathing is difficult give oxygen by trained personnel. Get immediate medical attention.

INGESTION: If swallowed, do NOT induce vomiting. Give milk or water. Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIAN: Overexposure to this product could lead to kidney failure and death. It has been reported that there is little value from chelating agents, however, Ascorbic Acid administered intravenously and locally is an effective antidote (converting Cr6 to Cr3) in preventing renal tubular failure. Skin ulcers may be treated by removal from exposure, daily cleaning, debridement, and application of antibiotic cream and dressing. Dialysis may be necessary as indicated. Up to 10 grams Ascorbic Acid in stomach. Plus IV Ascorbic Acid 1 gram in divided doses. Monitor blood chemistries, force fluids for diuresis (of chrome). Do not attempt chelation! Protect renal tubules.

REACTIVITY DATA

STABILITY: Stable

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Heat

INCOMPATIBILITY (Materials to Avoid): This product is a strong oxidizing agent, even in solution. Avoid contact with strong acids, alkalis, organic materials, oils, greases, or any easily oxidizable material. Corrosive to some metals.

*N/A = NOT AVAILABLE
**N/APP = NOT APPLICABLE
***N/E = NOT ESTABLISHED

NAME USED ON LABEL: Chromic Acid Flake

HAZARDOUS DECOMPOSITION PRODUCTS: Chromic oxide and oxygen.

****

SPECIAL PROTECTION INFORMATION

****

VENTILATION: Local exhaust or an enclosed handling system is highly recommended. Mechanical (general) ventilation is required.

EYE PROTECTION: Use chemical splash goggles and face shield (ANSI Z87.1 or approved equivalent). Do not wear contact lenses when in contact with this product. An emergency eye wash must be readily accessible to the work area.

RESPIRATORY PROTECTION: Use NIOSH approved respiratory equipment when airborne concentrations are equal to or may exceed exposure limits. For emergency or other conditions where exposure levels are not known or may be uncontrolled, use a positive pressure air-supplied or self-contained breathing apparatus (SCBA). Respiratory protection programs must comply with 29 CFR 1910.134.

ADDITIONAL PERSONAL PROTECTIVE EQUIPMENT: Select chemical resistant clothing such as gloves, aprons, boots or whole full body protection where contact may occur. Consult glove/clothing manufacturer to determine the most suitable chemical resistant clothing for user's application. Consideration must be given to durability and permeation resistance. Wash immediately if skin is contaminated. Remove contaminated clothing immediately after use and wash before re-use. Provide a safety shower at any location where skin contact may occur. Always wash skin thoroughly after handling.

****

SPECIAL PRECAUTIONS

****

HANDLING: Do not get in eyes, on skin, or on clothing. Do not breathe dusts. Do not take internally. Use only with adequate ventilation. Wash thoroughly after handling. Avoid contact with organic material. Avoid contact with reducing compounds. Emptied container retains vapor and product residue - Observe all label safeguards until container is cleaned, reconditioned or destroyed. Keep container tightly closed in an upright position.

STORAGE: Store in a cool, dry place away from incompatible material. Product is hygroscopic; protect from moisture.

*N/A = NOT AVAILABLE
**N/APP = NOT APPLICABLE
***N/E = NOT ESTABLISHED

NAME USED ON LABEL: Chromic Acid Flake

ENVIRONMENTAL INFORMATION

SPILL RESPONSE: Wear respirator and protective clothing when cleaning spill. Do not get spilled material on skin or clothing; stop leak if you can do so without risk. Remove ignition sources from area where flammable vapors may exist. Carefully sweep up spilled material, using non-sparking tools, and place in a suitable container for disposal. Avoid creating a dusty atmosphere. Ventilate area and CAREFULLY flush area where spill has occurred with water. Chromic acid will be formed with the addition of water. Retain this water/ residue mixture for evaluation and/or disposal.

RECOMMENDED DISPOSAL: Disposal of waste material from the use of this product may be subject to federal, state, and local regulations. Refer to Part 261 of 40 CFR for the applicability of federal regulations. Consult with your state and local governments for additional regulatory requirements. Disposal of this material must be in a manner compliant with all federal, state, and local regulations.

TRANSPORTATION

HAZARDOUS MATERIAL/DANGEROUS GOODS SHIPMENT IS INDICATED BY (X) BELOW:

(X) Department of Transportation (DOT/HM-181)
(X) International Air Transportation Association (IATA)
(X) International Maritime Organization (IMO/IMD)

SHIPPING INFORMATION:

UN(NA) Number	Hazard Class	Subsid. Risk	Labels	Mark (IMO)	Packaging Group
UN1463	5.1	8, 6.1	OXIDIZER CORROSIVE TOXIC	NONE	II

SHIPPING NAME:
DOT - RQ, Chromium Trioxide, Anhydrous, 5.1(8), UN1463, PGII, TOXIC
IATA - Same
IMO - Same

DOT QUANTITY LIMITS:
Passenger Air or Rail - 5 kg Cargo Air Only - 25 kg
Notes: Packaging Authorization - 49CFR 173.212; 173.242
Special Provisions - IB8, IP4

*N/A = NOT AVAILABLE
**N/APP = NOT APPLICABLE
***N/E = NOT ESTABLISHED

NAME USED ON LABEL: Chromic Acid Flake

IATA PACKAGING:

Passenger Aircraft (PA)	Cargo Aircraft Only (CAO)
PkgInst- 508 Max/Pkg- 5 kg	PkgInst- 511 Max/Pkg- 25 kg
Y508 2.5 kg	

NOTES: (CAO)- Combination and Single packagings are permitted
(IMO)- Stowage Category A.

****

MISCELLANEOUS

****

EPA/DOT - REPORTABLE QUANTITY (RQ) FOR HAZARDOUS SUBSTANCES:

(X) RQ of 10 lbs (4.54 Kg) for Chromic Acid.

EPA - Any release of hazardous substance(s) in a quantity equal to or exceeding the RQ in any 24-hour period requires the immediate notification of the National Response Center in Washington, D.C. at (800) 424-8802. Other notification requirements, such as state and local governments, may apply.

DOT - Any package containing a hazardous substance in a quantity equal to or exceeding the RQ is regulated as a hazardous material.

****

ADDITIONAL INFORMATION

****

Ratings:

	F	H	R	PPE	Spec Haz
HMIS	0	3*	1	X	N/APP
NFPA	0	3	1	N/APP	OX

F= Flammability H=Health R=Reactivity
PPE= Personal Protection Equipment Spec Haz= Special Health Hazards
W=Water Reactive OX=Oxidizer * = Chronic Hazard

SARA Title III Classifications:	Yes	No
Immediate (Acute) Health . . .	X	
Delayed (Chronic) Health . . .	X	
Sudden Release of Pressure . .		X
Reactive		X
Fire	X	

Components of this product are identified below if they are present in excess of de minimus reporting levels. Components that are not required to be identified by specific chemical name may have a generic description.

*N/A = NOT AVAILABLE
**N/APP = NOT APPLICABLE
***N/E = NOT ESTABLISHED

NAME USED ON LABEL: Chromic Acid Flake

SARA Title III Section 302 Extremely Hazardous Substances:
None

SARA Title III Section 313 Toxic Chemicals:
Chromium VI Compounds > 95 % 1333-82-0 (DeMinimis 0.1%)

STATE RIGHT-TO-KNOW

Components of this product which are specifically identified in the ingredients section of this MSDS may be listed as hazardous by these and/or other states: Massachusetts, New Jersey, Pennsylvania, Florida, New York, Michigan, Connecticut, Louisiana, Illinois, Rhode Island.

ATTENTION: This product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

CAREFULLY READ THE FOLLOWING: The identification of ingredients in this document meets or exceeds the requirements set forth in 29 CFR, 40 CFR, et al. at the date of publication. Ingredients present in a mixture or solution which are generically identified or not referenced in this document are not regulatorily required to be specifically identified or referenced. The information contained herein should be provided to all those who will use, handle, store, transport, or may otherwise be exposed to this product.

We certify that all ingredients, whether identified in this MSDS or not, are on the TSCA inventory (for USA manufacture and/or sales only).

THE INFORMATION CONTAINED HEREIN, TO THE BEST OF OUR KNOWLEDGE, IS CONSIDERED TO BE ACCURATE. SUCH INFORMATION IS OFFERED SOLELY FOR YOUR CONSIDERATION, INVESTIGATION, AND VERIFICATION, AND WE DO NOT SUGGEST OR GUARANTEE THAT ANY PRECAUTIONS, PROCEDURES, RECOMMENDATIONS ETC. ARE PREFERRED OR UNIQUE. ATOTECH USA INC. MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE USE OF THIS INFORMATION OR THE USE OF MATERIAL IDENTIFIED HEREIN, IN COMBINATION WITH ANY OTHER MATERIAL OR PROCESS, AND ASSUMES NO RESPONSIBILITY THEREFORE. THIS DOCUMENT WAS DEVELOPED UNDER THE REQUIREMENTS OF THE UNITED STATES, AND AS SUCH MAY NOT SATISFY OTHER STATE OR REGIONAL REQUIREMENTS.

Prepared by the Product Safety Department (PSD)

ISSUED: 10/22/2003 SUPERSEDES: 10/21/2003

*N/A = NOT AVAILABLE
**N/APP = NOT APPLICABLE
***N/E = NOT ESTABLISHED